

Course Title:	Grade 6 Math
Grade(s):	6

Course Description
In Grade 6, instructional time focuses on four critical areas: (1) connecting ratio and rate to whole number multiplication and division and using concepts of ratio and rate to solve problems; (2) completing understanding of division of fractions and extending the notion of number to the system of rational numbers, which includes negative numbers; (3) writing, interpreting, and using expressions and equations; and (4) developing understanding of statistical thinking. Course Units: 1. Area & Surface Area 2. Introducing Ratios 3. Unit Rates and Percentages 4. Dividing Fractions 5. Arithmetic in Base Ten 6. Expressions and Equations 7. Rational Numbers 8. Data Sets and Distributions
Approved Curricular Materials/Textbook(s)
IM 360 Online Resource

Unit Title	Unit Description (Include Unit Objectives)	Unit Pacing
Unit 1: AREA	In this unit, students learn to find areas of polygons by decomposing, rearranging, and composing shapes. They learn to understand and use the terms “base” and “height,” and find areas of parallelograms and triangles. Students approximate	20-26 Days (September -

& SURFACE AREA	areas of non-polygonal regions by polygonal regions. They represent polyhedra with nets and find their surface areas. • Reasoning to find areas • Parallelograms • Triangles • Polygons • Surface Areas • Squares and Cubes	October)
Unit 2: INTRODUCING RATIOS	In this unit, students learn to understand and use the terms “ratio,” “rate,” “equivalent ratios,” “per,” “at this rate,” “constant speed,” and “constant rate,” and to recognize when two ratios are or are not equivalent. They represent ratios as expressions, and represent equivalent ratios with double number line diagrams, tape diagrams, and tables. They use these terms and representations in reasoning about situations involving color mixtures, recipes, unit pricing, and constant speed. • What are Ratios? • Equivalent Ratios • Representing Equivalent Ratios • Solving Ratio and Rate Problems • Part-Part-Whole Ratios	19-22 Days (October - November)
Unit 3: UNIT RATES & PERCENTAGES	In this unit, students learn to understand and use the terms “unit rate,” “speed,” “pace,” “percent,” and “percentage,” and recognize that equivalent ratios have equal unit rates. They represent percentages with tables, tape diagrams, and double number line diagrams, and as expressions. They use these terms and representations in reasoning about situations involving unit price, constant speed, and measurement conversion. • Units of Measurement • Unit Conversions • Rates • Percentages	16-19 Days (November - December)

Unit 4: DIVIDING FRACTIONS	In this unit, students examine how the relative sizes of numerator and denominator affect the size of their quotient when numerator or denominator (or both) is a fraction. They acquire the understanding that <i>dividing by $\frac{a}{b}$</i> has the same outcome as <i>multiplying by b</i>, then by $\frac{1}{a}$. They compute quotients of fractions. They solve problems involving lengths and areas of figures with fractional side lengths and extend the formula for the volume of a right rectangular prism to prisms with fractional edge lengths and use it to solve problems. They use tape diagrams, equations, and expressions to represent situations involving partitive or quotitive interpretations of division with fractions. Given a multiplication or division equation or expression with fractions, they describe a situation that it could represent. They use tape diagrams and equations in reasoning about situations that involve multiplication and division of fractions. • Making Sense of Division • Meanings of Fraction Division • Algorithm for Fraction Division • Fractions in Lengths, Areas, and Volumes	16-18 Days (December - January)
Unit 5: ARITHMETIC IN BASE TEN	In this unit, students solidify their understanding of the base-ten number system, extend their use of the standard algorithms to add, subtract, and multiply decimals beyond tenths and hundredths, and learn to use algorithms to calculate quotients. They use calculations with whole numbers and decimals to solve problems set in real-world contexts. • Warming up to Decimals • Adding and Subtracting Decimals • Multiplying Decimals • Dividing Decimals	15-17 Days (January - February)
Unit 6: EXPRESSIONS & EQUATIONS	In this unit, students learn to understand and use the terms “variable,” “coefficient,” “solution,” “equivalent expressions,” “exponent,” “independent variable,” and “dependent variable.” They begin to write coefficients next to variables without a multiplication symbol, e.g., $10x$ rather than $10 \cdot x$, and note that x is $1 \cdot x$. They learn other situations in which the multiplication symbol can be omitted, e.g., $6 \cdot (3 + 2)$ can be written $6(3 + 2)$. They work with expressions	20-23 Days (February - March)

	that have positive whole-number exponents and whole-number, fraction, or variable bases, using properties of exponents strategically to evaluate these expressions, given a value for the variable. They find solutions for linear equations in one variable and simple equations that include exponents, e.g., $2^x = 32$ and $x^2 = 100$. They use these terms and representations (including expressions with two variables) in reasoning about real-world and geometrical situations, understanding that some values of variables may not make sense in a given context. They represent collections of equivalent ratios as equations and use and make connections between tables, graphs, and linear equations that represent the same relationships. • Equations in One Variable • Equal and Equivalent • Expressions with Exponents • Relationships between Quantities	
Unit 7: RATIONAL NUMBERS	In this unit, students interpret signed numbers in contexts (e.g., temperature above or below zero, elevation above or below sea level). They understand and use the terms “positive number,” “negative number,” “rational number,” “opposite,” “sign,” “absolute value,” “a solution to an inequality,” “less than,” “greater than,” and the corresponding symbols. They plot points with signed rational number coordinates on the number line, and recognize and use the connection between the relative position of two points on the number line and inequalities involving the coordinates of the points. (These are limited to strict inequalities rather than inequalities such as $2 \leq x$ which occur in grade 7.) They understand and use absolute value notation, understanding that the absolute value of a number is its distance from zero on the number line. Students graph inequalities in one variable on number line diagrams, using a circle or disk to indicate when a given point is, respectively, excluded or included. They solve simple inequalities, understanding that there may be infinitely many solutions, and show solutions symbolically and on the number line. They interpret solutions of inequalities in contexts, understanding that some solutions do not make sense in some contexts. Students plot pairs of signed number coordinates in the plane, understanding the relationship between the signs of a pair of coordinates and the quadrant of the corresponding point, and use coordinates to calculate horizontal and vertical distances between two points. Students understand and use the terms “common	20-22 Days (March - April)

	factor,” “greatest common factor,” “common multiple,” and “least common multiple,” and solve problems set in real-world contexts in which common factors or multiples occur. • Negative Numbers and Absolute Value • Inequalities • The Coordinate Plane • Common Factors and Common Multiples	
Unit 8: DATA SETS & DISTRIBUTIONS	In this unit, students learn about populations and study variables associated with a population. They understand and use the terms “numerical data,” “categorical data,” “survey” (as noun and verb), “statistical question,” “variability,” “distribution,” and “frequency.” They make and interpret histograms, bar graphs, tables of frequencies, and box plots. They describe distributions (shown on graphical displays) using terms such as “symmetrical,” “peaks,” “gaps,” and “clusters.” They work with measures of center—understanding and using the terms “mean,” “average,” and “median.” They work with measures of variability—understanding and using the terms “range,” “mean absolute deviation” or MAD, “quartile,” and “interquartile range” or IQR. They interpret measurements of center and variability in contexts. • Data, Variability, and Statistical Questions • Dot Plots and Histograms • Measures of Center and Variability • Median and Inter-Quartile Range (IQR)	20-22 Days (May - June)